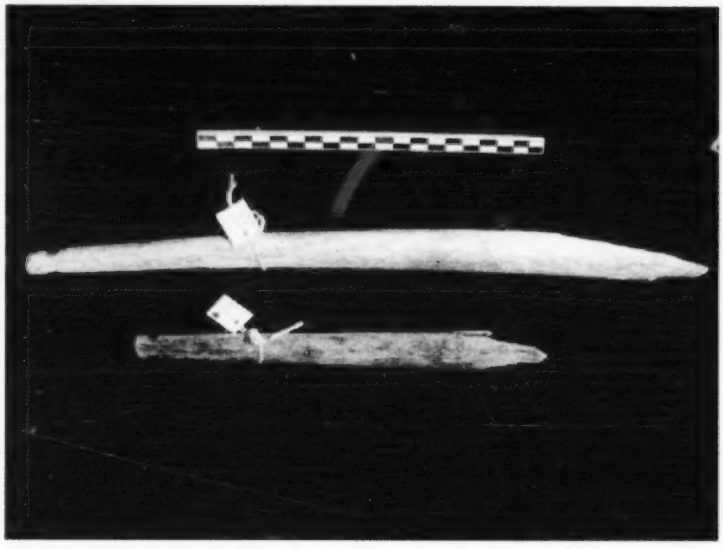
Column 429

Ice patch artifacts show links with White River ash

by Sarah Locke

When Mount Churchill erupted 1200 years ago, it could only have been a catastrophic event for aboriginal people living in the southern Yukon.

The volcano, located just across the Yukon's western border near the headwaters of the White River, exploded with a force ten times more powerful than that of Mount St. Helens in 1980. The ash carpeted much of the southern and central Yukon, and would have made life difficult for humans, and the plants and animals on which they relied.



These fragments of a maple bow helped establish a switch from hunting with atlatls to bows and arrows around the time that Mount Churchill exploded.

(photo: Government of Yukon)

"Archeologists have long pondered the significance of the White River ash on the human population of the southern Yukon," says Greg Hare, a Yukon government archaeologist, "but typically archeology does not have the sort of fine-grained lens needed to see this sort of thing."

Until recently, archeologists had to base most of their knowledge of Yukon prehistoric culture on stone points which cannot be radiocarbon dated, and could only speculate on the impact of specific events such as the explosion of Mount Churchill.

But in the last few months, thanks to the organic artifacts melting out of ice patches in the mountains of the southern Yukon, they now have proof that profound technological changes occurred in the Yukon at the same time as the explosion.

Around 800 AD, aboriginal people abruptly switched from hunting with throwing boards known as atlatls to the new technology of bow and arrow. The discovery is yet another example of the myriad of insights gained from ancient caribou dung and cultural artifacts found in the alpine ice patches.

In 1997 a Yukon government biologist, out on a hunt, first noticed thick layers of

caribou dung coating one ice patch. Caribou are no longer as abundant in the southern Yukon as they were in earlier times, and further research quickly established that it was ancient dung.

In summer, caribou retreat to lingering snowfields high in the mountains to escape from bugs and heat, and are notably reluctant to leave these refuges, even when people are stalking them. The bounty of cultural artifacts recovered from a series of ice patches makes it clear that ancient hunters took full advantage of this hunting opportunity.

The very first cultural artifact found in one of the alpine ice patches was an atlatl dart, since dated at 4,300 years old. Almost 200 artifacts have been found on different ice patches, and 75 of them have been radiocarbon dated.

Before the ice patch work began, archeologists had assumed that the switch from altatls to bows and arrows had been gradual. But as they continued to receive the radiocarbon dates, a pattern began to emerge.

"We had to wait for the data to come in, and it was pretty convincing when it did," says Hare.

"There is a clear dividing line between the dart technology and bow and arrow technology exactly at the time of the White River eruption.

Hare says the explosion no doubt set off an exodus of Athapaskan peoples from the Yukon, but the radiocarbon dates do not explain why people switched from atlatls to bows and arrows. "Were people temporarily displaced and learned a new technology and moved back? Did new people move in? We do not know. It is hard to tell from the archeological record," he says.

Some archaeologists had speculated that the 800 AD explosion might have set off a migration to the south that eventually led to the establishment of the Navajo culture in the southwestern United States. Mount Churchill had also exploded 700 years earlier, which might have set off an earlier exodus.

Atlatls were used for many thousands of years before the bow and arrow was invented, so there is a great deal of interest in when this technology gave way to the bow and arrow. No where else in North America has a series of artifacts so clearly laid out this change.

The oldest evidence of the shift in technology comes from a maple bow, which has been radiocarbon

dated three times, illustrating that individual radiocarbon dates are not always hard and fast.

The first radiocarbon date set the bow's age at 1300 years old, or about 100 years before Mt. Churchill erupted. "But that date was out of synch with the dates we obtained for the arrows," says Hare, "so we ran two more tests on the bow and the dates came back at 1060 and 1180.

Antler points recovered from melting ice patches in the Yukon. (photo: Government of Yukon)

"There is always a certain elasticity to radiocarbon dates, but the latest dates certainly seem to indicate that bow and arrow technology arrived in the Yukon immediately after the ashfall."

The wood of this bow is also of interest as today maple does not grow close to the ice patches themselves; the nearest source is the Skagway summit. Other changes in wood have also raised questions. Before 800 AD, most of the shafts were made of birch while after this date spruce appears to be the most commonly used wood.

Even the materials used for making points changed around the time of the explosion. Atlatl darts were tipped with stone points while bone and antler were used for arrows. Copper was starting to be used around this time and some archeologists have speculated that people might have used copper implements to carve points from antlers and bones.

Interestingly enough, the dated artifacts also indicate that people did not abandon the Yukon completely after the volcanic explosion, which equaled that of Krakatoa in explosive force.

Soon Hare and other archaeologists will return to the ice patches, trying to recover more artifacts that could possibly answer some of these outstanding questions. The snowfields at lower elevations are melting rapidly, so the race is on to recover as many artifacts as possible before a warming climate causes them to disappear.

"Basically anything that was deposited on the ice for the last 9,000 years might still be there," he says.

For more information on the ice patch artifacts, contact Greg Hare at greg.hare@gov.yk.ca.